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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/915,184 | 07/24/2001 | Edmund L. Wolak | P1292 | 5265 |

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EXAMINER

MENEFEE, JAMES A

ART UNIT PAPER NUMBER

2828

DATE MAILED: 02/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/915,184

Applicant(s)

WOLAK ET AL.

Examiner

James A. Menefee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.


- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.


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Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6. 6) ☐ Other: _____

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DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Invention I, claims 1-22, in Paper No. 8 is acknowledged. However, upon further consideration, the Examiner has determined that the claims are sufficiently related and a search of all claims will not cause a serious burden. Thus, the restriction requirement is deemed improper and has been withdrawn. An action on all claims (1-32) follows. The Examiner apologizes for any inconvenience caused by this error.

Specification

The disclosure is objected to because of the following informalities:

In paragraph 70, there are two instances where a blank line "_____" must be replaced with the appropriate serial number of the co-pending application.

In paragraph 73, on the second to last line, it is believed that "biconic" should be replaced with -chisel-. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 23-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claims 23-32 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are that there is no claimed relationship between the laser diode and the fiber, thus it is not known where they are positioned in relation to each other.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims ~~7-12 and~~ 23-32 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 30-33 of copending Application No. 09/915,186. Although the conflicting claims are not identical, they are not patentably distinct from each other.

The limitations of claims ~~7-12 and~~ 23-32 concerning the fiber and the lens of the fiber are all claimed in '186. There is nothing claimed about a laser diode coupled to the fiber. However, laser diodes coupled to fibers are well known in the art and can be seen, for example, in many of the references listed in the rejections below. Thus, patenting of any of claims ~~7-12 and~~ 23-32

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would provide an improper timewise extension to the right to exclude granted by the patenting of any of the claims cited above from '186.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented. However, it should be noted that claims 30-33 of '186 have been designated as being allowable subject matter.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6, 14-19, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harker (previously cited 5,940,557) in view of Aherne et al. (US 6,400,736).

Regarding claim 1, Harker discloses a system comprising a laser diode source 8 having a first Fabry-Perot cavity 9 having a first cavity axis inherently between a back facet and a front facet 10, each facet having a reflectance where the reflectance of the back facet is inherently higher than that of the front facet 10 because light is emitted from the front facet 10. A pigtail fiber 1 having a lensed fiber input end and positioned from the front facet 10 of the laser diode 8 to form an optical coupling region and is aligned relative to a lasing cavity 9 of the laser diode 8 to receive the first light output into the fiber. A first portion of the first light output will be reflected off the lensed fiber input end and a second portion will directed back into the cavity and a third portion will be reflected off the front facet. This forms a second cavity between the fiber

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and the front facet that inherently will be periodically out of phase with the first cavity 9 due to changes in the ambient temperature of the system, thus forming a tracking error. There are means for suppressing the formation of the second cavity, i.e. the fiber being angled so that less light will be reflected back to the first cavity 9 (see especially Figs. 1-3 and the discussion thereof). There is not disclosed a light monitor positioned adjacent to the back facet that receives light emitted from the back facet. Aherne teaches a laser diode that emits light from both a front facet 24 and a back facet 25, where light from the back facet 25 is received by a light monitor 29 (Fig. 2). It would have been obvious to one skilled in the art to include a back facet that emits light to a light monitor so that the light output of the laser can be monitored and a bias to the laser can be controlled based on the laser output, as taught by Aherne.

Regarding claim 6, the lensed fiber input of Harker is a chisel lens.

Regarding claim 14, the lensed fiber input facet 7 will be reflective to light, therefore it is interpreted as having a reflective coating. It is not taught that this reflectivity is higher than the reflectivity of the front facet. The applicant teaches that it is well known that the front facet of a laser diode may be anti-reflecting (par. 5). It would have been obvious to one skilled in the art to make the front facet anti-reflecting so that most of the laser output will go out that side, as taught by the applicant.

Regarding claim 15, it is not taught the lensed fiber input facet 7 has an AR coating disposed thereon, thus giving it a lower reflectivity than the front facet of the laser diode. However, in this modified system taught by Harker and Aherne, the lensed fiber input facet is merely for coupling the light into the fiber. All of the light is intended to be reflected by the grating back to the laser, thus one skilled in the art would want as minimal a reflectivity as

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possible for the lensed input facet. It is well known in the art that when a facet with minimal reflectivity is required, an AR coating may be placed on such a facet. It would have been obvious to one skilled in the art to place an AR coating on the lensed input facet, thus giving it a reflectivity lower than that of the front facet of the laser diode, so reflections by the lensed input facet will not interfere with the normal operation of the system, as is well known.

Regarding claim 16, the light monitor taught by Aherne is a photodiode.

Regarding claim 17, it is not disclosed that the light monitor is an avalanche photo diode. However, Aherne teaches that any known photodiode may be used, and avalanche photodiodes are well known in the art, therefore it would have been an obvious engineering design choice to choose an avalanche photodiode as the photodiode.

Regarding claim 18, there is not disclosed a grating in the fiber. Aherne teaches a grating 34 in the fiber. It would have been obvious to one skilled in the art to include such a grating in order to stabilize the output, as taught by Aherne.

Regarding claim 19, this claim merely recites the characteristics of the grating. The grating that is taught by Aherne will inherently have such characteristics.

Regarding claim 22, there is not disclosed a snout to support the fiber and two gratings in the fiber. Aherne teaches that the fiber is contained by the package 22, which can be interpreted as a snout, and that there are two gratings located in the fiber. It would have been obvious to one skilled in the art to include the gratings in order to stabilize the output, and it would have been obvious to one skilled in the art to include the fiber in a snout in order to keep the fiber aligned, as taught by Aherne.

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Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harker in view of Aherne, and further in view of Shimizu (US 5,706,302). Harker and Aherne teach the limitations of claim 1 as shown above, but do not teach that there is a platform as claimed for suppressing the length of the cavity. Shimizu teaches a laser system where a laser diode is coupled with a fiber in a package. The laser and fiber are on a platform that is over twice as thick as the package wall, the platform being made of AlN. As the platform is twice as thick and made of the materials as claimed, it will have a stiffness greater than that of the package (see especially Fig. 2 and the discussion thereof). It would have been obvious to one skilled in the art to use such a platform in the system taught by Harker and Aherne as it provides cooling and alignment for the elements, as taught by Shimizu.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harker in view of Aherne, and further in view of Roff (previously cited US 5,500,911). Harker discloses that the fiber input end is aligned at an angle relative to the laser diode cavity axis, but does not disclose that the angle should be 2-6 degrees. Roff teaches a fiber that is angled relative to a laser cavity at an angle of 5.5-8 degrees (col. 3 line 54 – col. 4 line 3). It would have been obvious to one skilled in the art to dispose the fiber at such an angle from the laser diode cavity so that any light energy that is reflected by the end face of the fiber is directed away from the optical axis of the system, as taught by Roff.

Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harker in view of Aherne, and further in view of Verdiell et al. (US 5,870,417). Harker and Aherne

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disclose all of the limitations of the parent claims as shown above, but do not disclose that the grating is more reflective than the front facet, specifically with a reflectivity of greater than 6%. Verdiell teaches a similar laser system having a grating that is more reflective than the anti-reflecting front facet, and the reflectivity of the grating may be 24% (Fig. 1 and discussion thereof, col. 5 line 31). It would have been obvious to one skilled in the art to give the front facet and the grating such reflectivities in order to form an external cavity, as taught by Verdiell.

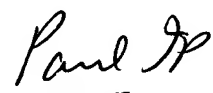
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Meneff whose telephone number is (703) 605-4367. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JM
January 22, 2003


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